ANNUAL REPORT 1965

GALT

water pollution control plant

DIVISION OF PLANT OPERATIONS

Ontario Water Resources Commission

ONTARIO WATER RESOURCES COMMISSION

OFFICE OF THE GENERAL MANAGER

Members of the Galt Local Advisory Committee,
City of Galt.

Gentlemen:

I am pleased to provide you with the 1965 Annual Report for the Galt Water Pollution Control Plant, OWRC Project No. 61-S-90.

We appreciate the co-operation you have extended to our Operations staff throughout the year, and trust that continuation of this close association will ensure even greater progress in the sphere of water pollution control.

Yours very truly,

D. S. Caverly,
General Manager.

ONTARIO WATER RESOURCES COMMISSION

801 BAY STREET

TORONTO 5

J. A. VANCE, LL.D.
CHAIRMAN

J. H. H. ROOT, M.P.P.
VICE-CHAIRMAN

D. S. CAVERLY
GENERAL MANAGER

W. S. MacDONNELL
COMMISSION SECRETARY

General Manager,
Ontario Water Resources Commission.

Dear Sir:

I am pleased to provide you with the 1965 Annual Report on the operation of the Galt Water Pollution Control Plant, OWRC Project No. 61-S-90.

The report presents design data, outlines operating problems encountered during the year and summarizes in graphs, charts and tables all significant flow and cost data.

Yours very truly,

B. C. Palmer, P. Eng.,
Director,
Division of Plant Operations.

FOREWORD

This report provides useful information on the operating efficiency of this project during 1965. It is intended to act as a guide in gauging plant performance. To implement that aim, it includes detailed statistical and cost data, a description of the project and a summary of its operation during the year.

Of particular interest will be the cost data, which show the total cost to the municipality and the areas of major expenditure.

The Regional Operations Engineer is primarily responsible for the preparation of the report, and has compiled and arranged the material. He will be pleased to answer any questions regarding it. Other groups, however, were involved in the production, and these include the statistics section, the Drafting Section of the Division of Sanitary Engineering and the Division of Finance.

B. C. Palmer, P. Eng.,
Director,
Division of Plant Operations.

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GALT
water pollution control plant

operated for

THE CITY OF GALT

by the

ONTARIO WATER RESOURCES COMMISSION

CHAIRMAN: Dr. James A. Vance

VICE-CHAIRMAN: J. H. H. Root, M.P.P.

COMMISSIONERS

W. D. Conklin, Q.C.
D. A. Moodie
H. E. Brown
L. E. Venchiarutti

GENERAL MANAGER: D. S. Caverly

ASSISTANT GENERAL MANAGERS

L. E. Owers
F. A. Voege
K. H. Sharpe
A. K. Watt

COMMISSION SECRETARY

W. S. MacDonnell

DIVISION OF PLANT OPERATIONS

DIRECTOR: B. C. Palmer

Assistant Director: C. W. Perry
Regional Supervisor: D. A. McTavish
Operations Engineer: B. W. Hansler

801 Bay Street Toronto 5

'65 REVIEW

A total of approximately 1853.88 million gallons of sewage were treated at Galt WPCP during the year for a total operating cost of $73,672.49. The operating cost per million gallons and the cost per pound of BOD removed were $39.74 and $0.04 respectively.

The approximate average daily flow during the year was 5.107 million gallons. The design flow of 5.0 million gallons per day was exceeded 30 percent of the time. Average daily flows during March and April were 7.03 and 6.77 million gallons per day respectively. Comparing these high average daily flows with average daily flows below the design value during the remainder of the year, it can be seen that serious ground water infiltration occurred in the sewer system. Low average raw sewage, BOD and suspended solids concentrations of 122 ppm and 142 ppm tend to confirm further that infiltration is a problem. Normal BOD and suspended solids concentrations are in the order of 200 ppm for each. Flow figures were not available during January and February owing to an inoperative flow meter.

The average BOD and suspended solids removal efficiencies were 91.8 percent and 85.2 percent respectively.

Under the supervision of head office engineers, the plant staff has operated a clean, attractive and efficient plant for the City of Galt.

GLOSSARY

BOD	biochemical oxygen demand (a measure of organic content)
cfm	cubic feet per minute
comminution	shredding of solids into small fragments
DWF	dry weather flow
effluent	outflow
flocculation	bringing very small particles together to form a larger mass (the floc) before settling
fps	feet per second
gpcd	gallons per capita per day
gpm	gallons per minute
grit	sand, dust, stones, cinders and other heavy inorganic material
influent	inflow
lin. ft.	lineal feet
mgd	million gallons per day
mlss	mixed liquor suspended solids
ppm	parts per million
ss	suspended solids
TDH	total dynamic head (usually refers to pressure on a pump when it is in operation)

HISTORY
1961 – 1965

INCEPTION

In 1961, the City of Galt and the Ontario Water Resources Commission initiated plans to provide secondary treatment additions to the Galt Water Pollution Control Plant.

The firm of Proctor and Redfern, Toronto, Ontario, Consulting Engineers was engaged to prepare plans and specifications for the project.

APPROVAL

On June 15, 1961, the Ontario Municipal Board granted approval for the plant extensions and the city signed an agreement with the Ontario Water Resources Commission on October 26, 1961, to finance, construct and operate the plant.

CONSTRUCTION

Louis Donolo (Ontario) Limited, Toronto, Ontario, began construction in November 1961 and by July of 1963, the Division of Plant Operations assumed the responsibility of operating the new plant.

TOTAL COST

$406,919.32

A. B. McEWEN
CHIEF OPERATOR

Project Staff

Operators

F. MacKay
D. Munro
A. Rooke
L. Ward

Maintenance Mechanic: L. Sage

Groundsman/Operator: R. Norsic

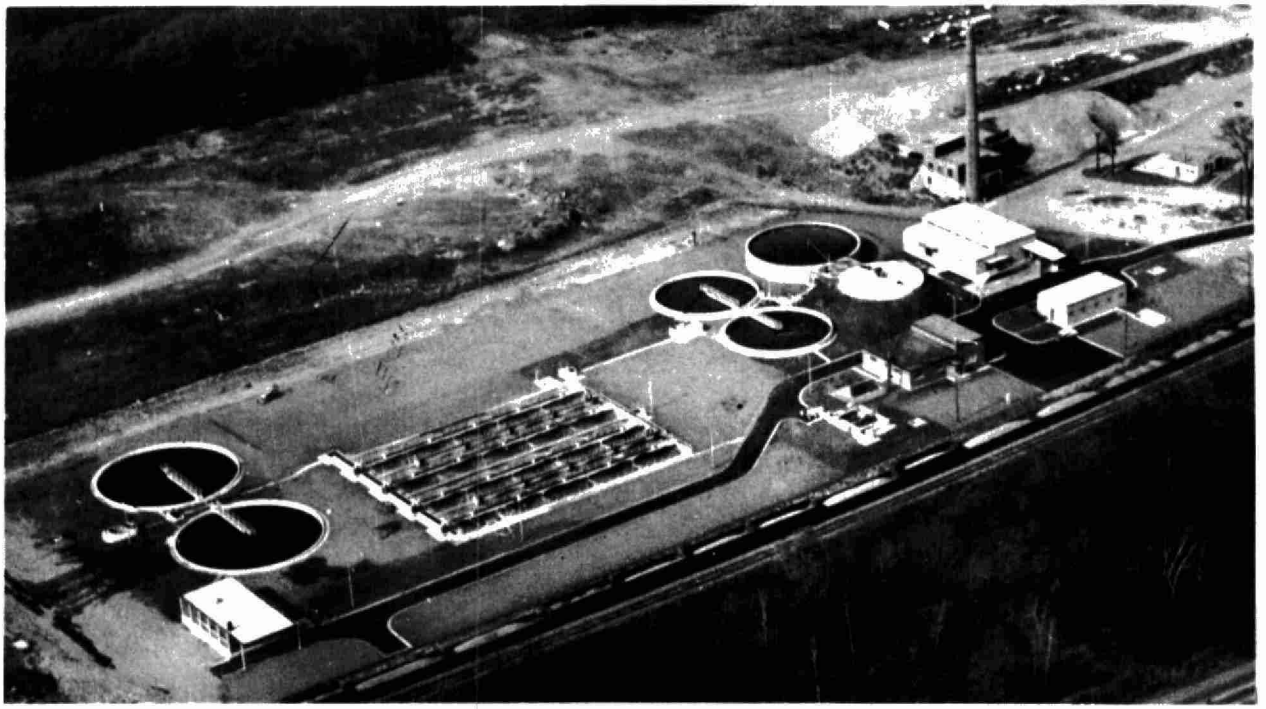
COMMENTS

The plant was normally staffed between the hours of 7 a.m. and 11 p.m. seven days per week. Each man worked a normal 40 hour week.

Mr. F. Angus was promoted from Operator to Chief Operator at the Kitchener water pollution control plant.

The vacant operator's position was terminated and replaced by a maintenance mechanic's position. Mr. L. Sage was hired on June 7, 1965 as a maintenance mechanic.

Mr. F. MacKay successfully completed the basic and intermediate sewage operators' courses sponsored by the OWRC. The senior course will be held in early 1966.



Description of Project

INFLUENT WORKS

The influent flow is collected by a 54 inch diameter sanitary trunk sewer which connects to the overflow control chamber. The chamber is divided into two compartments. From the first compartment the sewage flows to the pumping station via a 36 inch diameter pipe controlled by an automatic sluice gate. The excess sewage during an extremely high flow period flows over a weir to the second compartment from where a 54 inch diameter plant bypass sewer conveys it to the Grand River. The flow entering the pumping station flows through a 36 inch barminutor which is mechanically cleaned bar screen equipped with a shredding drum to cut the screenings and return them to the main flow. The sewage then passes through a Parshall flume which measures, indicates and records the flow. It then enters the raw sewage wet well where it is lifted to the detritor. From this point the flow through the remainder of the plant is by gravity. The detritor is a mechanical grit removal unit. As the sewage flows through this unit, the grit settles and, is collected, washed and dried and is buried on the plant grounds.

PRIMARY CLARIFICATION

Two circular concrete clarifiers, each 60 feet in diameter receive the flow from the detritor. As the sewage flows through these units the heavier particles settle to the bottom and the lighter objects and grease rise to the surface. Each clarifier is provided with circular sludge collector mechanisms which move the bottom raw sludge to a central draw-off point

and the surface scum to collector hoppers beside the tank. Both raw sludge and scum are then pumped to the primary digester or vacuum filter.

AERATION

The primary clarifier effluent is then directed to the aeration section which has four single pass tanks, that are divided into five cells each. Each cell is equipped with one Ames Crosta 'Simplex" mechanical aerator, a total of 20 for the plant. The tanks, continually seeded with activated sludge settled in the final tanks, provide the environment where, through biological action, the finely divided, suspended and colloidal particals are oxidized. These particles are normally referred to as BOD and Suspended Solids.

FINAL CLARIFIERS

The aeration tank effluent containing a high concentration of activated sludge is then directed to the final clarifiers where the activated sludge settles rapidly to the bottom. A clear supernatant or effluent is discharged to the chlorination tank, The activated sludge is collected from the bottom and returned to the aeration section. Excess activated sludge is wasted to the primary clarifiers where it is removed along with the raw sludge.

CHLORINATION

The plant effluent is retained for approximately 15 minutes after chlorination in order to provide enough time for disinfection to take place. A residual of 0.5 ppm of chlorine is maintained in the effluent being discharged to the river.

SLUDGE DIGESTION TANKS

One primary digestion tank and one secondary digestion tank are used at this plant. The primary tank was part of the original plant.

The primary tank receives combined raw sludge, waste activated sludge and scum from the primary clarifiers. This tank has a fixed, gas tight concrete roof with gas collection piping. The sludge in the primary digester is heated by a boiler and heat exchanger that is fueled by gas produced in the digesters.

Mixers continually keep the primary digested sludge in suspension.

The secondary tank, constructed as part of the plant extension is used to complete the final stages of anaerobic digestion and to settle the digested sludge. The sludge in this digester is unheated and unmixed. The supernatant is returned to the aeration tanks.

VACUUM FILTER

Digested sludge from the secondary digester or raw sludge from the primary clarifiers is pumped to a 380 sq. ft. vacuum filter. Lime and ferric chloride are added to the sludge to affect coagulation.

The filter drum is placed under a vacuum and moisture is withdrawn from the sludge. The drum continuously rotates through a hopper containing the sludge, and the filtered sludge is dropped onto a conveyor lift for removal.

Appurtenances included with the filter are vacuum pumps, filtrate return pumps, lime and ferric chloride pumps, a mixing tank and sludge pumps. The filtrate is returned to the main sewage flow for retreatment.

PROJECT COSTS

NET CAPITAL COST (Final)	$1,211,259.48
DEDUCT - Portion Financed by CMHC	804,340.16
Long Term Debt to OWRC	$ 406,919.32
Debt Retirement Balance at Credit (Sinking Fund) December 31, 1965	$ 39,450.38
Net Operating	$ 73,672.49
Debt Retirement	14,771.00
Reserve	8,856.28
Interest Charges	22,317.82
TOTAL	$ 119,617.59

RESERVE ACCOUNT

Balance at January 1, 1965	$ 14,446.50
Deposited by Municipality	8,856.28
Interest Earned	989.14
	$ 24,291.92
Less Expenditures	779.35
Balance at December 31, 1965	$ 23,512 57

MONTHLY OPERATING COSTS

MONTH	TOTAL EXPENDITURE	PAYROLL	CASUAL PAYROLL	FUEL	POWER	CHEMICAL	GENERAL SUPPLIES	EQUIPMENT	REPAIRS & MAINTENANCE	*SUNDRY	WATER
JAN	3279.18	2426.34	214.12	232.45			68.32	43.48	45.00	249.47	
FEB	6153.19	2426.34	132.86	612.73	808.66	1759.24	66.92		58.47	246.58	41.39
MARCH	5043.56	2971.62	52.80	837.34	147.11	237.58	109.03	208.48	312.31	119.42	47.87
APRIL	4839.36	2901.88	141.88	307.74	599.07	237.58	179.75	18.43	374.56	28.58	49.89
MAY	6842.61	2811.87	680.96	444.31	582.34		392.81	135.54	761.33	1018.12	15.33
JUNE	4778.35	2641.09	425.48	261.55	367.54	408.06	99.44	152.47	126.47	41.18	55.07
JULY	5521.76	2586.02	463.91	142.29	696.96	726.48	58.39	300.82	386.58	89.40	70.91
AUG	6464.43	2586.02	709.40	129.70	722.66	1884.75	177.98	10.66	30.42	103.62	109.22
SEPT	4961.92	2599.22	539.20	52.34	666.77	475.16	259.32	16.85	223.91	22.38	106.77
OCT	10653.13	3895.16	748.36	334.94	637.34	1634.59	464.96	51.45	595.59	2153.44	137.30
NOV	5580.59	2733.15	526.71	118.80	580.70	261.11	151.18	105.32	594.53	374.67	134.42
DEC	9554.41	2724.62	241.20	719.68	1133.50	2402.39	794.10	1130.92	1717.53	[1422.70]	113.17
TOTAL	73672.49	33303.33	4876.88	4193.87	7142.65	10026.94	2822.20c	2174.42	5226.70	3024.16	881.34

* SUNDRY INCLUDES SLUDGE HAULING COSTS WHICH WERE $3657.76

BRACKETS INDICATE CREDIT

YEARLY OPERATING COSTS

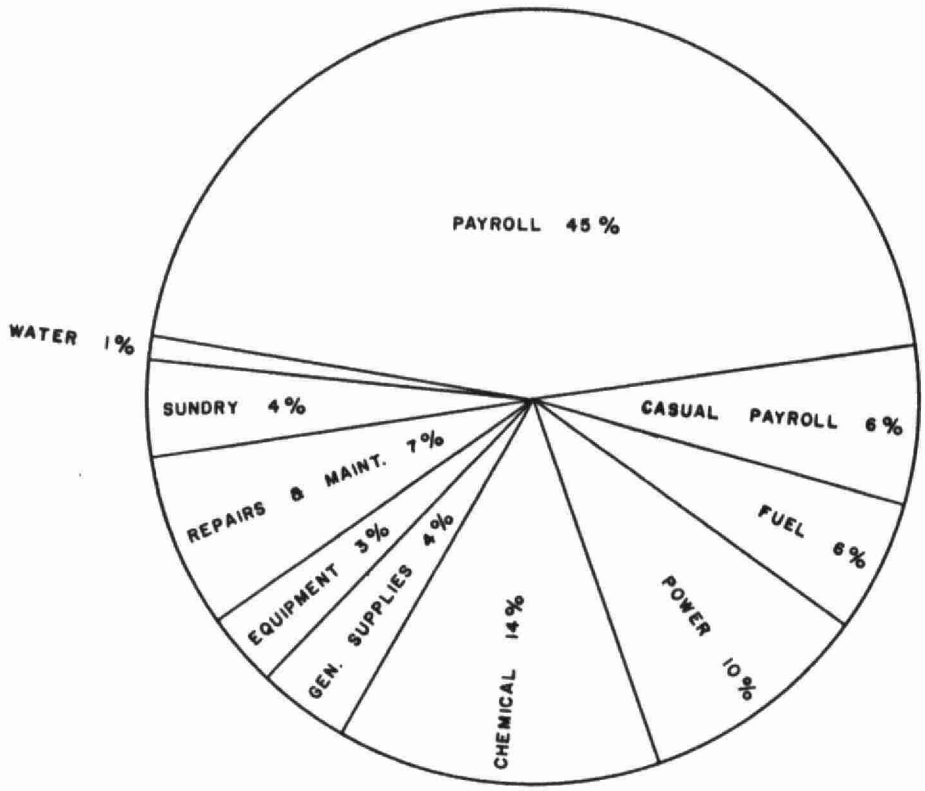
YEAR	M.G. TREATED	TOTAL COST	COST PER FAMILY PER YEAR	COST PER MILLION GALLONS	COST PER L.B. OF BOD REMOVED
1964	1895.161	$ 77,875.88	* $ 10.57	$ 41.09	3 CENTS
1965	1853.883	73,672.49	9.52	39.74	4 CENTS

* BASED ON ESTIMATED ANNUAL POPULATION AND 3.9 PERSONS PER FAMILY

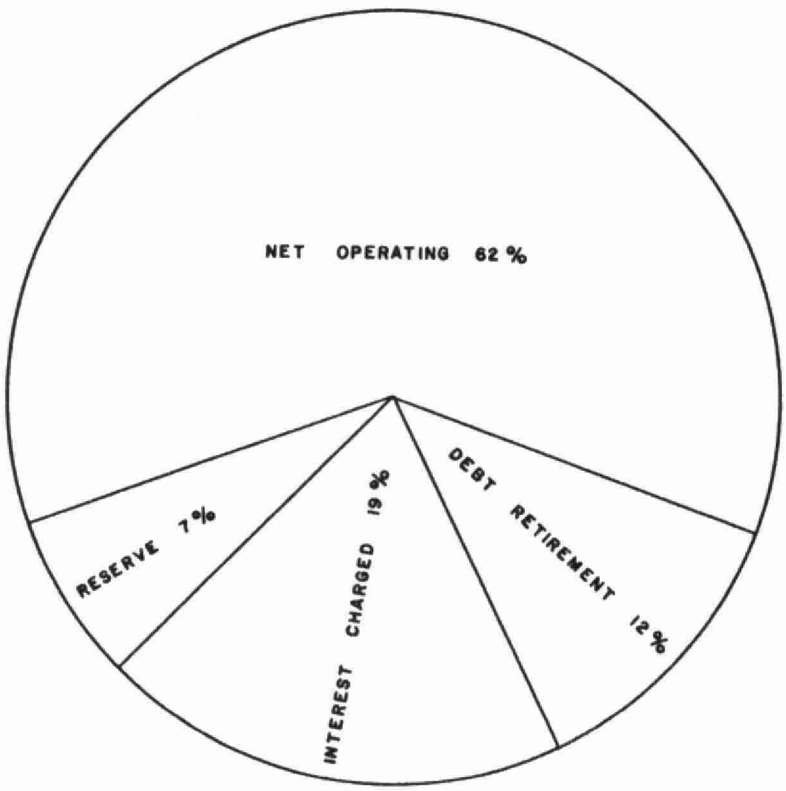
VACUUM FILTER COSTS (MONTHLY)

MONTH	COST PER MONTH						COST PER TON DRY WEIGHT					
	$FeCl_3$	LIME	LABOUR	ELEC	MAINT	TOTAL	$FeCl_3$	LIME	LABOUR	ELEC	MAINT	TOTAL
JANUARY	20.31	27.32	14.40	11.63	2.80	76.46	12.69	17.08	9.00	7.27	1.75	47.79
FEBRUARY	121.44	105.14	55.80	18.85	15.19	316.42	13.99	12.11	6.43	2.17	1.75	36.45
MARCH	113.76	165.13	77.40	22.60	21.61	400.50	9.21	13.37	6.27	1.83	1.75	32.43
APRIL	61.46	80.78	45.90	17.24	12.42	217.80	8.66	11.38	6.46	2.43	1.75	30.68
MAY	76.69	81.38	104.40	21.33	19.44	303.24	6.90	7.32	9.40	1.92	1.75	27.29
JUNE	35.20	195.43	120.60	26.89	28.98	407.10	2.13	11.80	7.28	1.62	1.75	24.58
JULY	28.99	271.15	198.90	38.68	49.21	586.93	1.03	9.64	7.07	1.38	1.75	20.87
AUGUST	235.47	355.81	219.60	40.53	52.38	903.79	7.87	11.89	7.34	1.35	1.75	30.20
SEPTEMBER	184.50	254.83	192.60	33.08	39.60	704.61	8.15	11.26	8.51	1.46	1.75	31.13
OCTOBER	446.42	343.93	322.20	70.83	104.37	1287.75	7.49	5.77	5.40	1.19	1.75	21.60
NOVEMBER	60.92	58.21	55.80	22.54	21.51	218.98	4.96	4.74	4.54	1.83	1.75	17.82
DECEMBER	241.82	244.73	207.00	39.91	51.31	784.77	8.25	8.35	7.06	1.36	1.75	26.77
TOTAL	1626.98	2183.84	1614.60	364.11	418.82	6208.35	91.33	124.71	84.76	25.81	21.00	347.61
AVERAGE PER MONTH	135.58	181.99	134.55	30.34	34.90	517.36	7.61	10.39	7.06	2.15	1.75	28.97

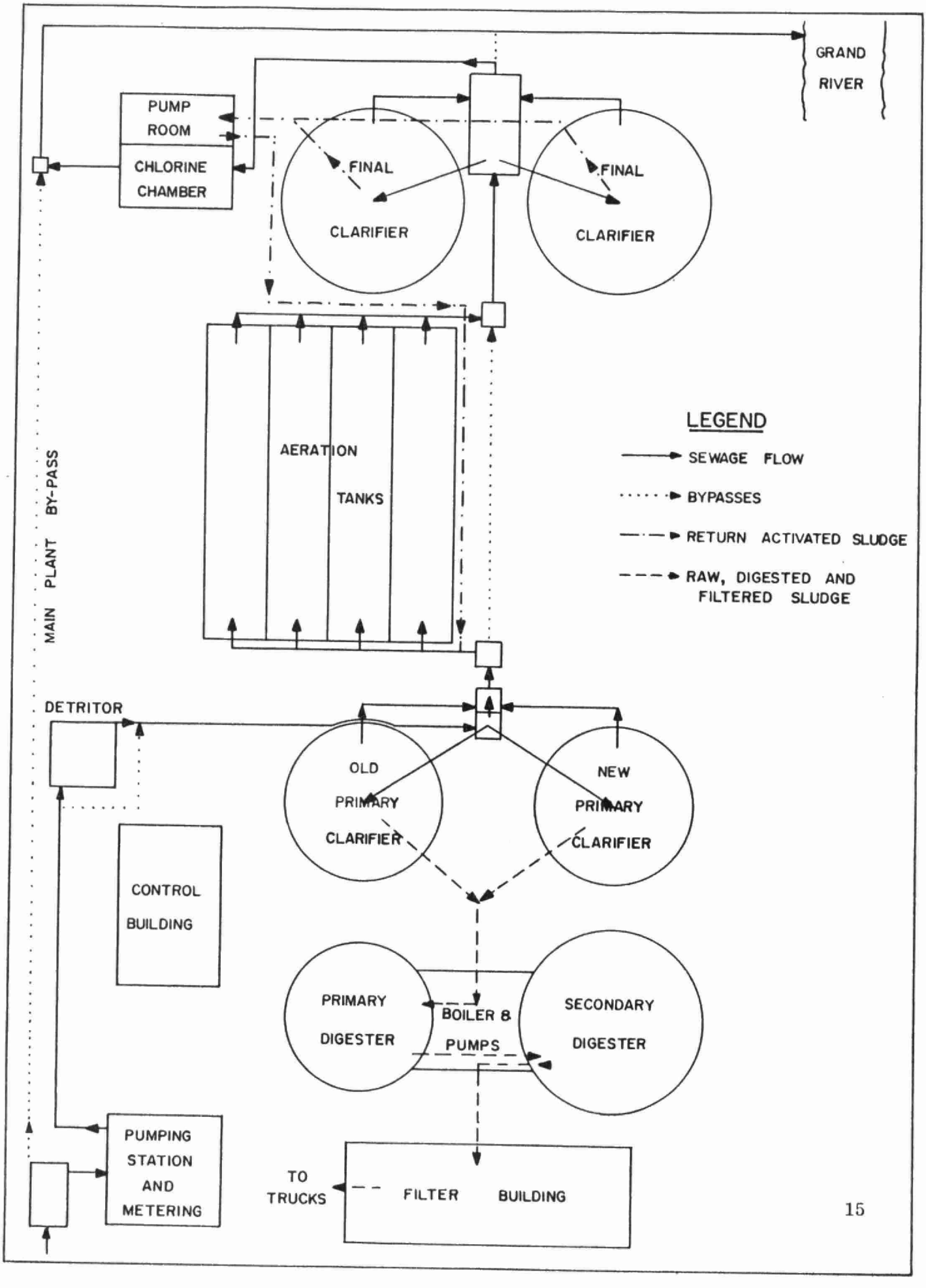
1965 OPERATING COSTS



TOTAL ANNUAL COST



Technical Section


GRAND RIVER
PUMP ROOM
CHLORINE CHAMBER
FINAL CLARIFIER
FINAL CLARIFIER
AERATION TANKS
MAIN PLANT BY-PASS
LEGEND
SEWAGE FLOW
BYPASSES
RETURN ACTIVATED SLUDGE
RAW, DIGESTED AND FILTERED SLUDGE
DETRITOR
OLD PRIMARY CLARIFIER
NEW PRIMARY CLARIFIER
CONTROL BUILDING
PRIMARY DIGESTER
BOILER & PUMPS
SECONDARY DIGESTER
PUMPING STATION AND METERING
TO TRUCKS
FILTER BUILDING

Design-Data

GENERAL

Type of Plant - Activated sludge

Design Population - 34,000

Per Capita Flow - 147 gallons per day.

Design Plant Flow - 5.0 mgd

Five Day BOD

Raw Sewage - 250 ppm

Removal - 90%

Suspended Solids

Raw Sewage - 250 ppm

Removal - - 95%

INFLUENT SEWER

54 inch diameter

OVERFLOW CONTROL CHAMBER

Two compartments; 36 inch diameter automatic sluice gate.

RAW SEWAGE PUMPS

3 Babcock-Wilcox, Goldie McCulloch pumps, each with a capacity of 3500 gpm at 30 ft. head. Two pumps, equipped with 50 hp wound rotor motors controlled with a variable speed controller, one with a 50 hp squirrel cage motor.

PRIMARY TREATMENT

Screening

1 Chicago Pump Model C Barminutor, 36 inch screen equipped with a differential controller. The barminutor bypass channel is equipped with manually cleaned bar screen.

Parshall Flume

18 inch throat

Grit Removal

One detritor - Eimco mechanism

Size - 18 ft. x 18 ft. x 2 ft.

Volume - 4,000 gallons

Detention period - 1.15 min. at design flow.

Primary Clarification

Type - Two concrete circular structures, one existing. Existing clarifier equipped with Dorr sludge collection mechanism, the other with an Eimco mechanism.

Size 60 ft. diameter x 9 ft. SWD.

Volume - 157,500 gallons each.. Total volume 315,000 gallons (50,600 cu. ft.)
Detention Period - 1.5 hours @ design flow.
Surface Settling Rate - 884 gallons per sq. ft. per day @ design flow.
Weir Overflow Rate - 13,250 gallons per lin. ft. weir per day @ design flow.

SECONDARY TREATMENT

Aeration Section

Four single pass tanks. Each pass divided into 5 cells.'

Ames Crosta 'Simplex"mechanical aerators - 20, 1 per cell.

Size - each cell 30 ft. x 30 ft. x 13.74 ft.
Total aeration volume - 1,460,000 gallons .
Detention period - 7 hours @ design flow.

Return sludge capacity 70% of design flow.

FINAL CLARIFICATION

Type - two concrete circular structures equipped with Eimco sludge collection mechanism.
Size - 75 diameter x 10 SWD.
Volume - 225,000 gallons each. Total volume - 550,000 gallons (88,400 cu. ft.)
Detention Period - 2.64 hours at design flow.
Surface Settling Rate - 566 gallons per sq. ft. per day @ design flow.

Weir Overflow Rate - 10,600 gallons per lin. ft. weir per day @ design flow.

CHLORINATION

Type - one concrete unit, baffled, rectangular.
Size - 49.75 ft. x 21.5 ft. x 7.25 ft.
Volume - 46,000 gallons (7,372 cu. ft.)
Contact period - 13.25 minutes at design flow
Chlorinator - one Fisher and Porter unit fully automatic or manual.
Effluent - discharged directly to the Grand River.

SLUDGE TREATMENT

Digestion

Two stage, one concrete fixed roof primary digester equipped with two Eimco draft tube mixers and one steel floating roof secondary digester.

Size of Primary digester - 50 ft. diameter x 20 ft. SWD.

Volume of Primary digester - 30,300 cu. ft.
Size of Secondary digester - 70 ft. diameter x 20 ft. SWD.

Volume of Secondary digester - 77,000 cu. ft.
Total Capacity - 3.42 cu. ft. per capita.

VACUUM FILTER

One Eimco cloth belt type vacuum filter with 380 sq. ft. surface area.

Digested or raw sludge may be filtered.

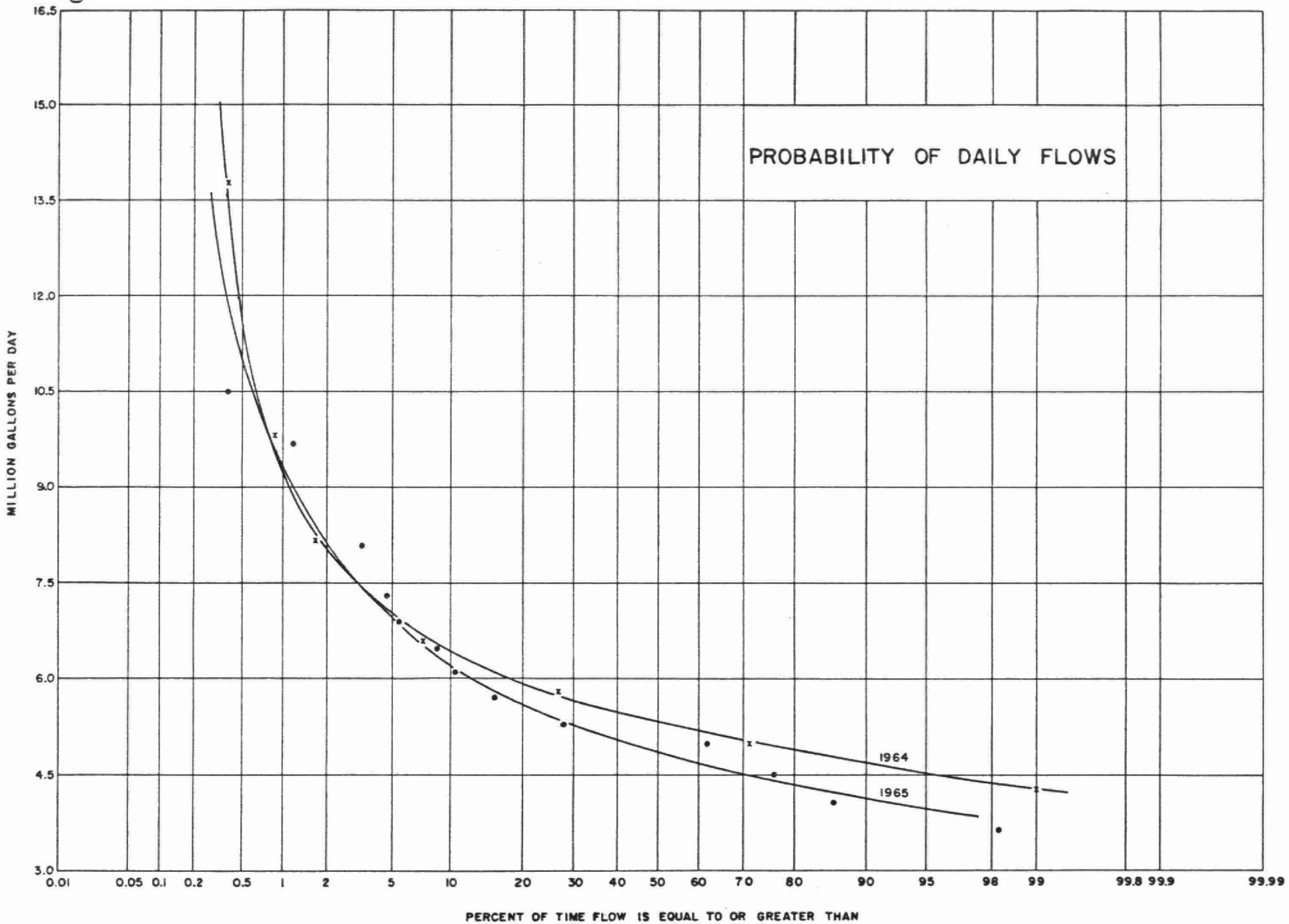
The filtered sludge is removed from the site by truck.

Process Data

Average daily flows plotted on a monthly and probability basis are shown on the accompanying graphs.

The design flow of 5.0 million gallons per day was exceeded 30 percent of the time. The average daily flows averaged per month were very high during March and April with values of 7.03 and 6.77 million gallons per day respectively. The average daily flow per month then dropped below the design value during May to 4.81 million gallons per day and remained below the design value during the remainder of the year. Owing to an inoperative flow meter accurate flow figures were not available during January and February.

The approximate average daily flow during the year was 5.107 million gallons.


PROBABILITY OF DAILY FLOWS
MILLION GALLONS PER DAY
16.5
15.0
13.5
12.0
10.5
9.0
7.5
6.0
4.5
3.0
0.01
0.05
0.1
0.2
0.5
1
2
5
10
20
30
40
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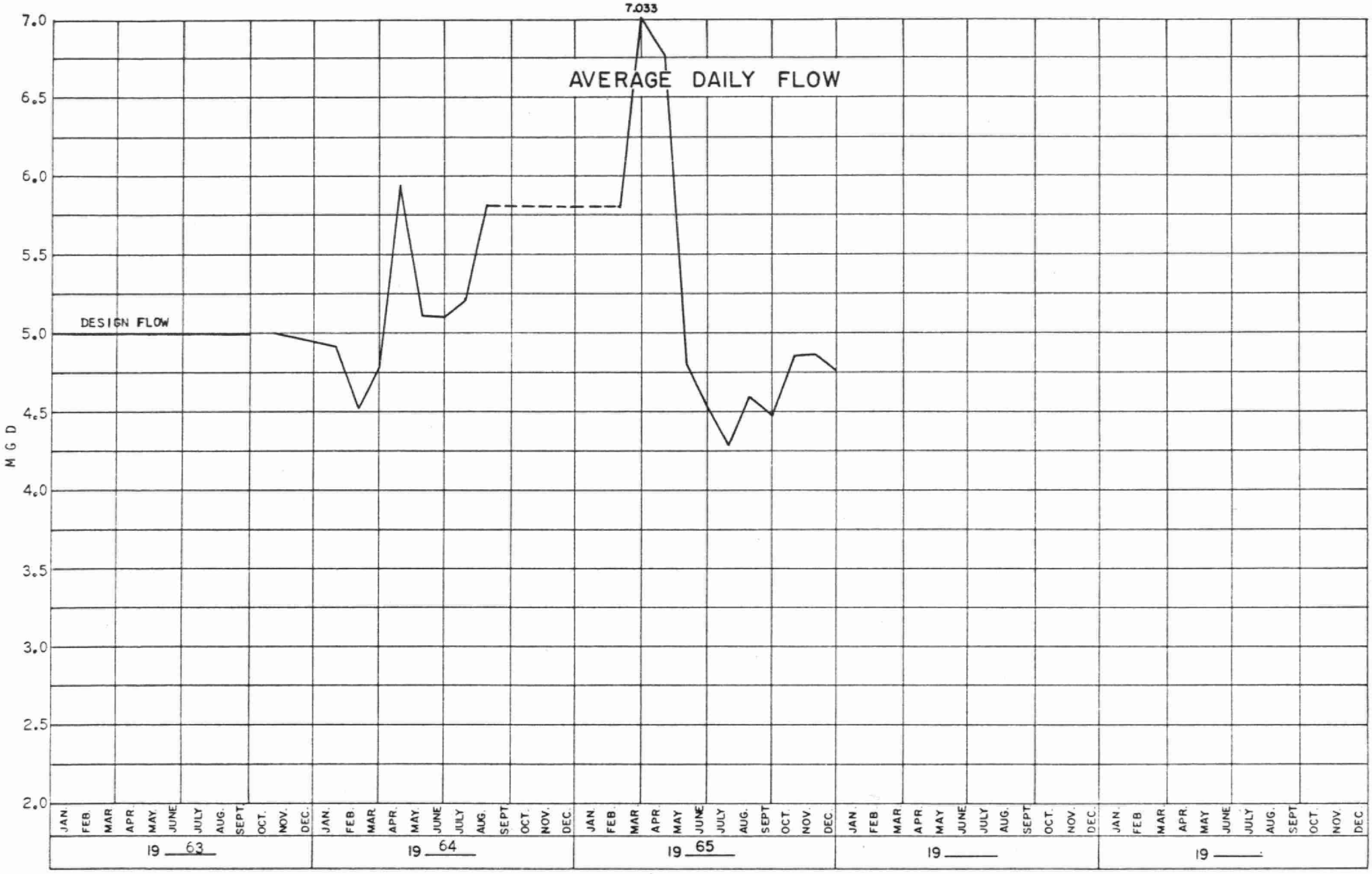
60
70
80
90
95
98
99
99.8
99.9
99.99
1964
1965
PERCENT OF TIME FLOW IS EQUAL TO OR GREATER THAN


7.033
AVERAGE DAILY FLOW
DESIGN FLOW
7.0
6.5
6.0
5.5
5.0
4.5
4.0
3.5
3.0
2.5
2.0
M G D
JAN. FEB. MAR. APR. MAY. JUNE JULY AUG. SEPT OCT. NOV. DEC.
19 63
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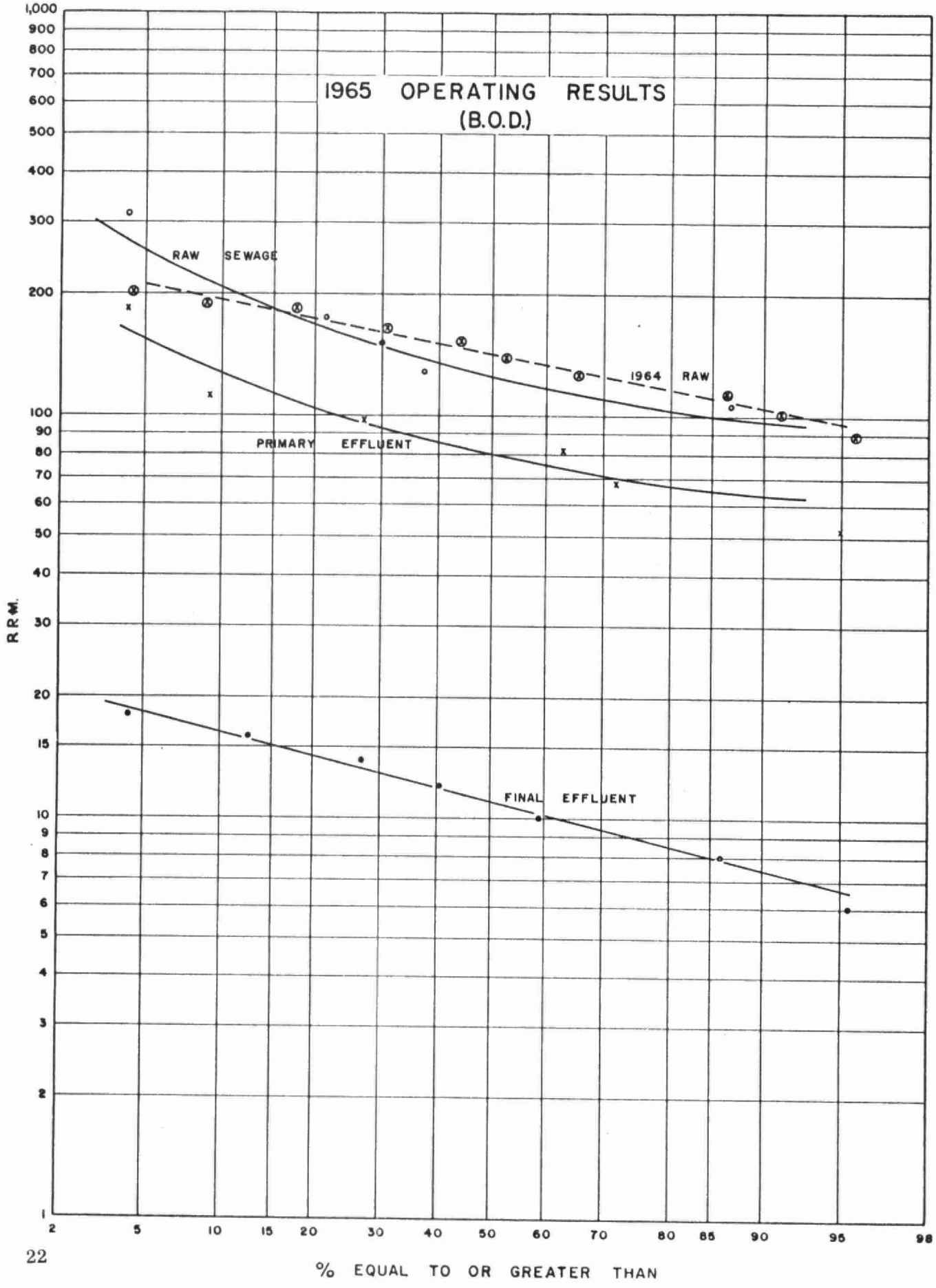
1965 OPERATING RESULTS
(B.O.D.)
RAW SEWAGE
1964 RAW
PRIMARY EFFLUENT
FINAL EFFLUENT
R.R.M.
% EQUAL TO OR GREATER THAN
1,000
900
800
700
600
500
400
300
200
100
90
80
70
60
50
40
30
20
15
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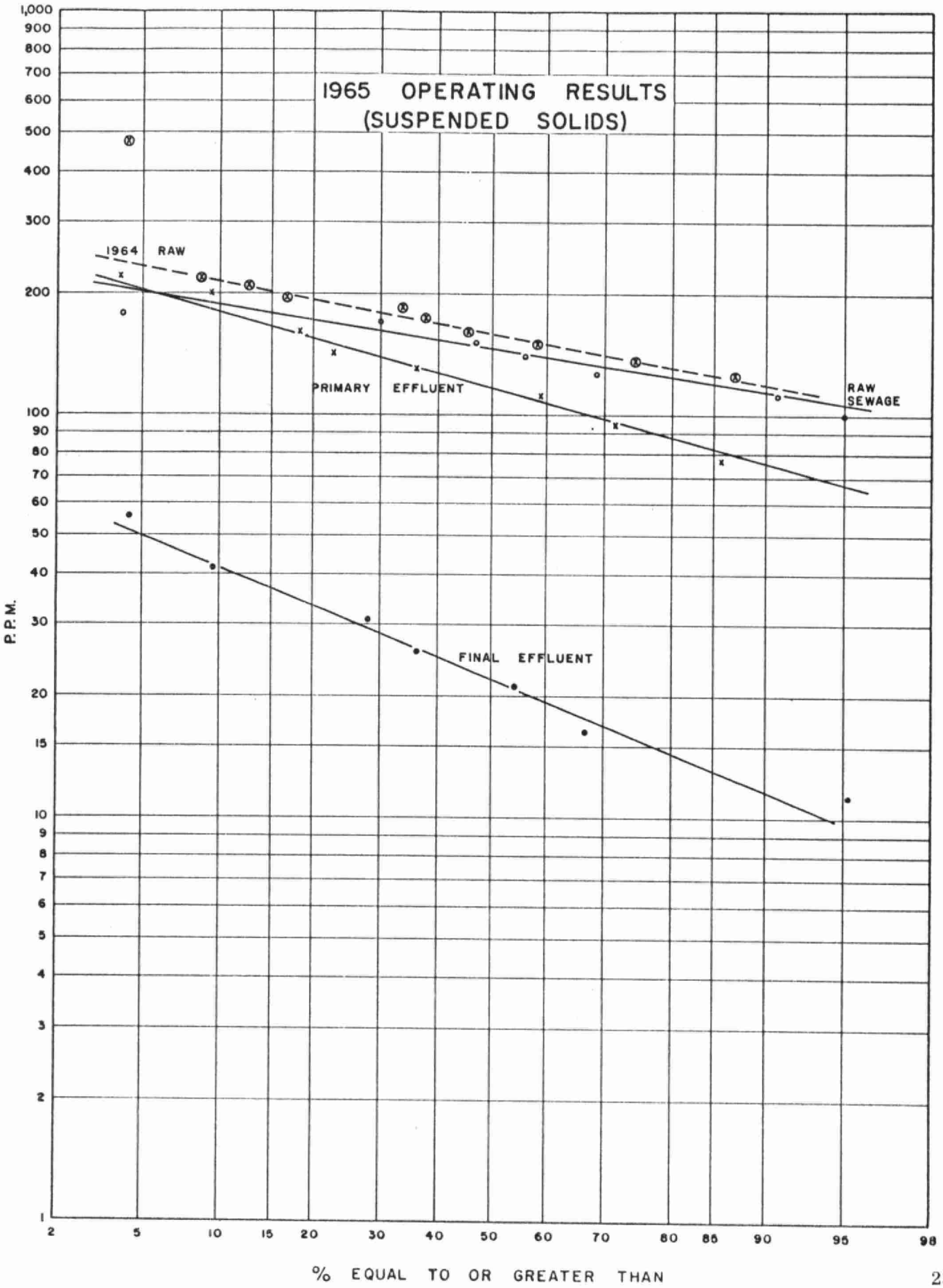
1965 OPERATING RESULTS
(SUSPENDED SOLIDS)
1964 RAW
PRIMARY EFFLUENT
RAW SEWAGE
FINAL EFFLUENT
P.P.M.
% EQUAL TO OR GREATER THAN
1,000
900
800
700
600
500
400
300
200
100
90
80
70
60
50
40
30
20
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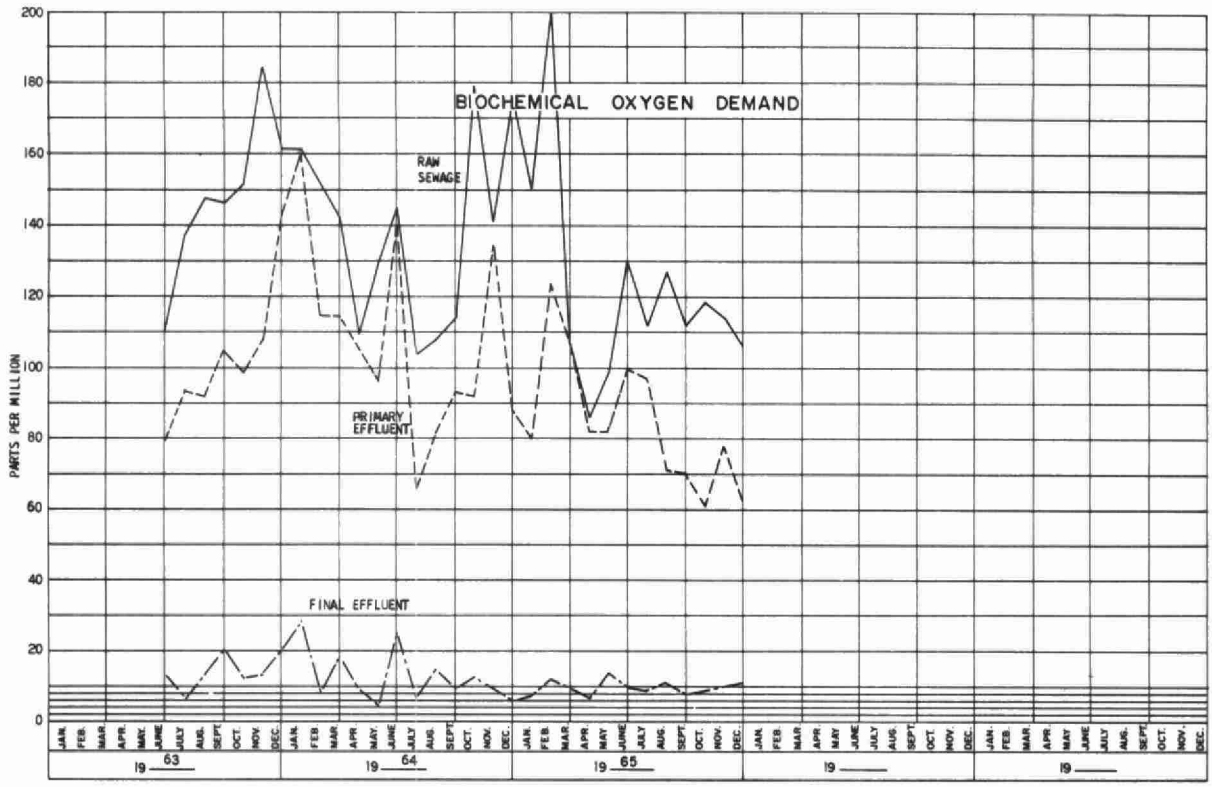
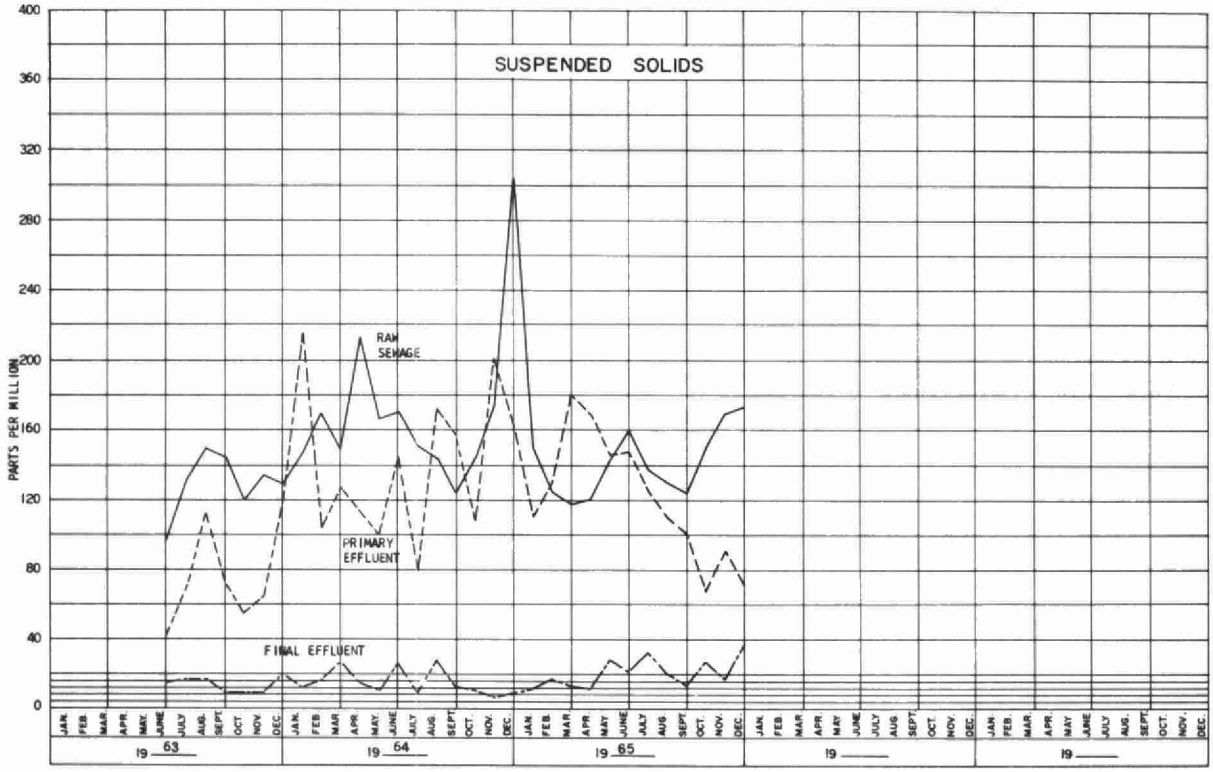


MONTHLY VARIATIONS



GRIT, B.O.D AND S.S. REMOVAL

MONTH	B. O. D.				S. S.				GRIT REMOVAL CU. FT.
	INFLUENT P.P.M.	EFFLUENT P.P.M.	% REDUCTION	TONS REMOVED	INFLUENT P.P.M.	EFFLUENT P.P.M.	% REDUCTION	TONS REMOVED	
JAN.	150	7.6	95.0	112.1	150	12	92.0	108.6	6
FEB.	198	12	94.0	132.2	125	18	85.5	76.1	8
MAR.	106	10	90.5	104.6	118	14	88.0	113.4	8
APR.	86	7.2	91.5	80.1	120	12	90.0	109.8	1
MAY	99	14	86.0	63.4	143	29	79.5	85.0	3
JUNE	130	10	92.5	81.8	160	22	86.0	94.1	1
JULY	112	9	92.0	68.6	138	33	76.0	70.0	-
AUG.	127	11	91.0	82.4	130	21	84.0	77.7	-
SEPT.	112	9	92.0	69.2	124	14	88.5	73.9	6
OCT.	118	9.2	92.0	77.9	150	28	81.5	87.4	6
NOV.	114	10	91.0	75.9	170	17	90.0	111.7	-
DEC.	106	11	89.5	70.2	174	36	79.5	102.0	5
TOTAL	-	-	-	1038.2	-	-	-	1121.6	44
AVG.	122	10	92.0	86.5	142	21	85.0	93.5	4

COMMENTS

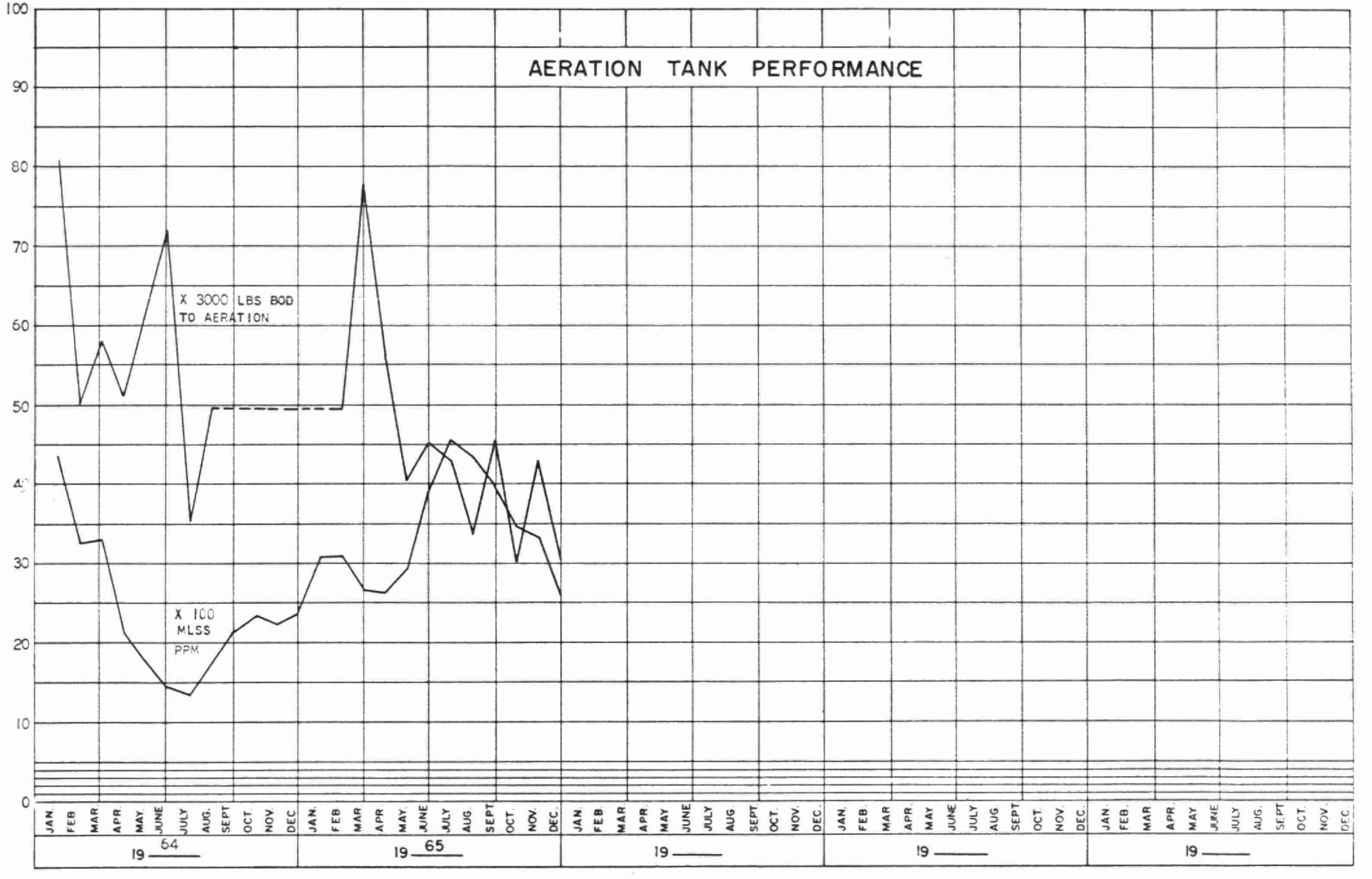
BOD and suspended solids concentrations of raw sewage, primary effluent and final effluent are plotted on a probability and monthly basis on the accompanying graphs.

The average raw sewage BOD concentration exceeded the design value of 250 ppm 5 percent of the time. The average raw sewage suspended solids concentration did not exceed the design value of 250 ppm.

The average effluent BOD concentration of 10 ppm did not exceed the OWRC objective of not greater than 15 ppm. However, the OWRC objective of an effluent with a suspended solids concentration not greater than 15 ppm was exceeded. The average effluent objectives for BOD and suspended solids concentrations were exceeded 15 and 78 percent of the time respectively.

The average BOD and suspended solids removals efficiencies were 91.8 percent and 85.2 percent respectively.

During the year, 44 cubic yards of grit were removed which is rather low for a plant of this size.


AERATION TANK PERFORMANCE
X 3000 LBS BOD TO AERATION
X 100 MLSS PPM
100
90
80
70
60
50
40
30
20
10
0
JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT OCT. NOV. DEC.
19 64
19 65
19 ____
19 ____
19 ____

AERATION SECTION

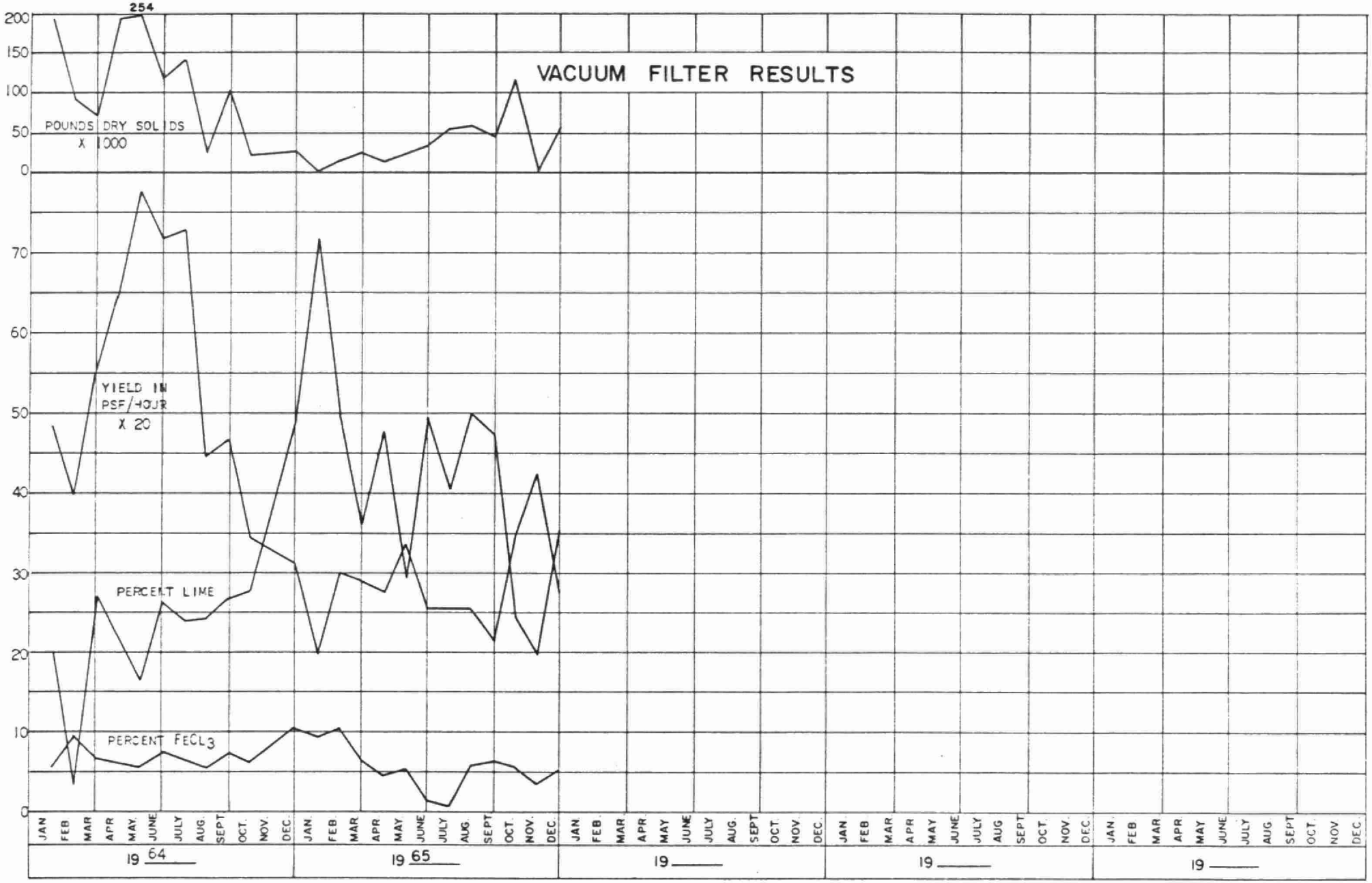
MONTH	PRIM. EFFL. B.O.D. P.P.M.	M.L.S.S. P.P.M.	LBS. BOD. PER 100 LBS. M. L. S. S.	CUBIC FEET AIR PER LB. B.O.D. REMOVED
JANUARY	80	3093	-	-
FEBRUARY	124	3096	-	-
MARCH	107	2682	21	-
APRIL	82	2605	13	-
MAY	82	2901	10	-
JUNE	100	3922	8	-
JULY	97	4541	7	-
AUGUST	71	4360	5	-
SEPTEMBER	70	4004	5	-
OCTOBER	61	3455	5	-
NOVEMBER	78	3063	10	-
DECEMBER	62	2678	15	-
TOTAL	-	-	-	-
AVERAGE	85	3367	10	-

COMMENTS

The average pounds of BOD per 100 pounds of MLSS ratio of 10 is on the low side of the recommended range for this ratio.

The average primary effluent BOD concentration of 85 ppm is less than normally expected.

Air supply cannot be directly measured as the plant utilizes mechanical aeration.


VACUUM FILTER RESULTS
254
200
150
100
50
0
POUNDS DRY SOLIDS
X 1000
70
60
50
40
30
20
10
0
YIELD IN
PSF/HOUR
X 20
PERCENT LIME
PERCENT FECL3
JAN FEB MAR APR MAY JUNE JULY AUG. SEPT OCT. NOV. DEC.
19 64
19 65
19 ____
19 ____
19 ____

VACUUM FILTER OPERATION

MONTH	FILTER HOURS		% SOLIDS DIGEST SLUDGE	LBS. DRY SOLIDS FILTERED	LBS. LIME	% LIME	LBS. $FeCl_3$	% $FeCl_3$	% SOLIDS FILTERED SLUDGE	YIELD PSF/HOUR
	#1	#2								
JAN.	8.0	-	3.70	3195	2300	71.9	304	9.51	28.5	1.00
FEB.	31.0	-	4.13	17371	8850	49.9	1818	10.46	22.7	1.50
MAR.	43.00	-	4.74	24706	13900	56.2	1703	6.89	23.0	1.48
APR.	25.5	-	4.00	14207	6800	47.8	920	6.47	21.8	1.38
MAY.	58.0	-	3.62	22217	6850	29.6	1148	5.16	23.1	1.68
JUNE	67.0	-	3.23	33123	16450	49.6	527	1.59	27.2	1.28
JULY	110.50	-	3.20	56251	22824	40.6	434	0.77	27.3	1.28
AUG.	122.0	-	2.90	59863	29950	50.0	3525	5.89	24.9	1.28
SEPT.	107.0	-	3.30	45255	21450	47.4	2762	6.10	25.6	1.08
OCT.	179.0	-	3.90	119271	28950	24.2	6683	5.60	25.4	1.74
NOV.	31.0	-	4.27	24581	4900	19.9	912	3.71	23.5	2.12
DEC.	115.0	-	4.10	58635	20600	35.1	3620	6.17	25.1	1.37
TOTAL	897.0	-	-	478675	183824	-	24356	-	-	-
AVG.	74.8	-	3.76	39890	15319	38.4	2030	5.09	24.8	1.43

COMMENTS

Lime dosages in this process were high, particularly during the early period of the year.

DIGESTER OPERATION

MONTH	SLUDGE TO DIGESTERS			SLUDGE FROM DIGESTERS			GAS PRODUCED 1000'S Cu. Ft.
	1000'S CU FT.	% SOLIDS	% VOL. MAT.	1000'S CU FT.	% SOLIDS	% VOL. MAT	
JAN.	-	-	-	-	-	-	-
FEB.	-	-	-	-	-	-	-
MAR.	-	-	-	-	-	-	-
APR.	-	-	-	-	-	-	-
MAY	45.87	4.44	2.91	-	3.70	1.98	-
JUNE	65.89	4.27	2.59	-	3.30	1.66	-
JULY	58.64	3.86	2.34	-	3.22	1.64	-
AUG.	89.98	4.19	2.69	-	3.22	1.67	-
SEPT.	79.45	4.88	3.15	-	3.32	1.67	-
OCT.	86.11	5.41	3.62	-	3.97	2.18	-
NOV.	77.09	5.67	3.94	-	5.28	2.80	-
DEC.	61.67	4.89	3.29	-	4.10	2.15	-
TOTAL	564.70	-	-	-	-	-	-
AVG.	70.59	4.70%	3.07%	-	3.35%	1.94%	-

COMMENTS

The average reduction in volatile matter was 28.5 percent.

CHLORINATION

MONTH	PLANT FLOW (MG)	POUNDS CHLORINE	DOSAGE RATE (P.P.M)
JANUARY	* 157.449	6310	4.01
FEBRUARY	* 142.212	5390	3.79
MARCH	218.015	6019	2.76
APRIL	203.414	5216	2.56
MAY	149.209	5735	3.84
JUNE	136.321	5677	4.16
JULY	133.255	6134	4.60
AUGUST	142.547	5900	4.14
SEPTEMBER	134.445	5610	4.17
OCTOBER	143.222	5944	4.15
NOVEMBER	145.965	5270	3.61
DECEMBER	147.829	5870	3.97
TOTAL	1853.883	68075	-
AVERAGE	154.490	5673	3.67

* Jan. and Feb. flows prorated on daily average flow of 5.079 for period March-December.

COMMENTS

The chlorine dosage rate is based on the amount of chlorine necessary to maintain a residual of 0.5 ppm after 15 minutes of contact time. The dosage rate is comparable to those at other plants.

RECOMMENDATIONS

The average effluent BOD and suspended solids concentrations were 10 ppm and 21 ppm respectively which indicates that the plant afforded very good efficiency in treating the sewage. Throughout the year, the plant staff operated a clean, attractive and efficient plant for the City of Galt.

CONCLUSIONS

Very high flows during the early part of the year and lower than normal raw sewage and BOD concentrations indicate that serious infiltration is a problem in the City of Galt sewer system. In order to extend the period when plant enlargement is necessary, it is recommended that the City of Galt take steps to decrease the sewer infiltration as much as possible.


ONTARIO WATER RESOURCES COMMISSION